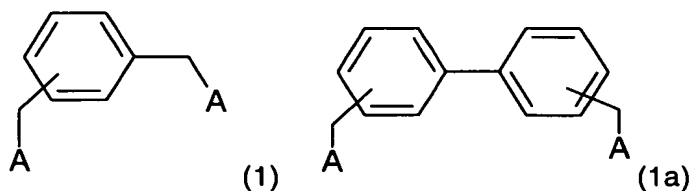


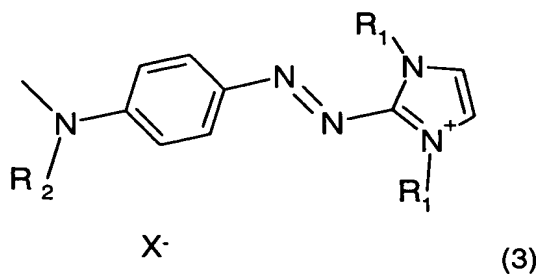
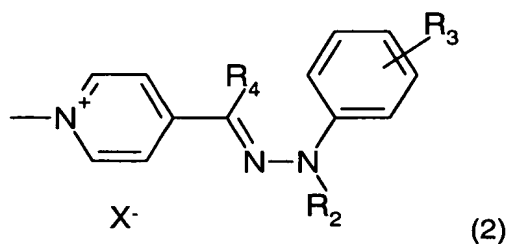
Claims:

1. Cationic dye of formula (1) or (1a)



wherein

A is an organic radical of formula (2) or (3)



wherein

$R_1$  and  $R_2$  are each independently of the other unsubstituted or substituted  $C_1$ - $C_{14}$ alkyl or an aryl radical,

$R_3$  is hydrogen, unsubstituted or substituted  $C_1$ - $C_{14}$ alkyl, unsubstituted or substituted  $C_1$ - $C_{14}$ alkoxy, cyan or halogenid,

$R_4$  is hydrogen, unsubstituted or substituted  $C_1$ - $C_{14}$ alkyl or an aryl radical,

and

$X^+$  is an anion.

2. Cationic dye according to claim 1, wherein

$R_1$  and  $R_2$  are each independently of the other unsubstituted or substituted  $C_1$ - $C_6$ alkyl or unsubstituted or substituted benzyl,

$R_3$  is hydrogen, unsubstituted or substituted  $C_1$ - $C_6$ alkyl, unsubstituted or substituted  $C_1$ - $C_6$ alkoxy, cyan or chlorid,

R<sub>4</sub> is hydrogen, unsubstituted or substituted C<sub>1</sub>-C<sub>6</sub>alkyl or unsubstituted or substituted benzyl,  
and

X<sup>-</sup> is an anion.

3. Cationic dye according to anyone of claims 1 and 2, wherein

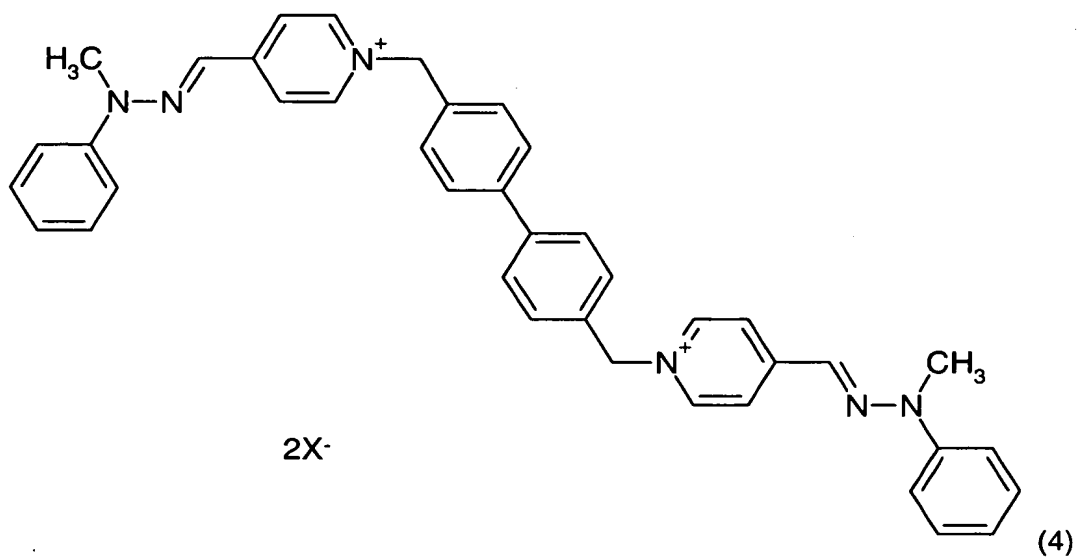
R<sub>1</sub> and R<sub>2</sub> are each independently of the other unsubstituted or substituted C<sub>1</sub>-C<sub>6</sub>alkyl or  
unsubstituted or substituted benzyl,

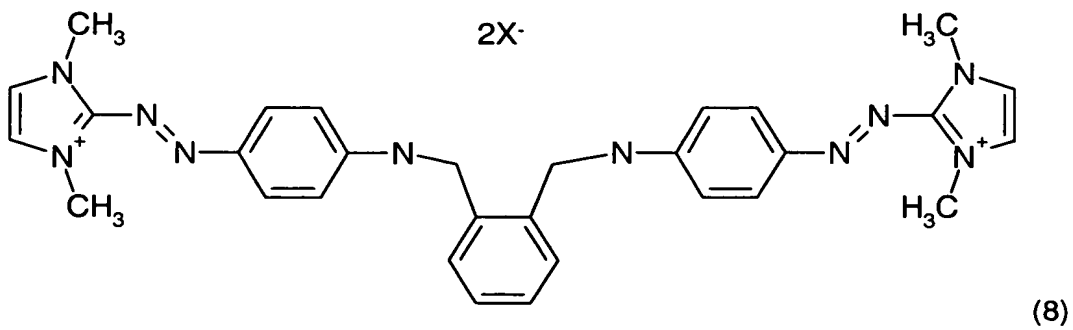
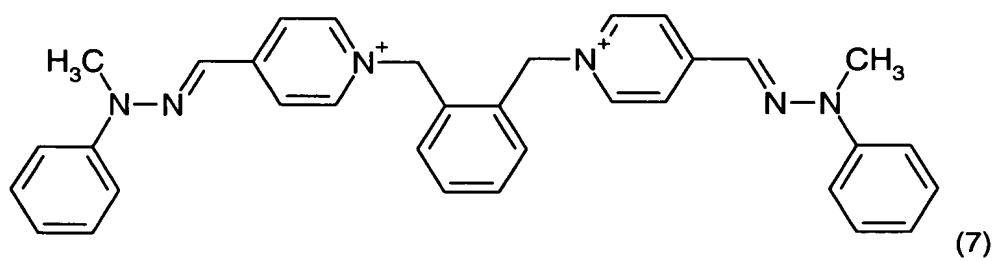
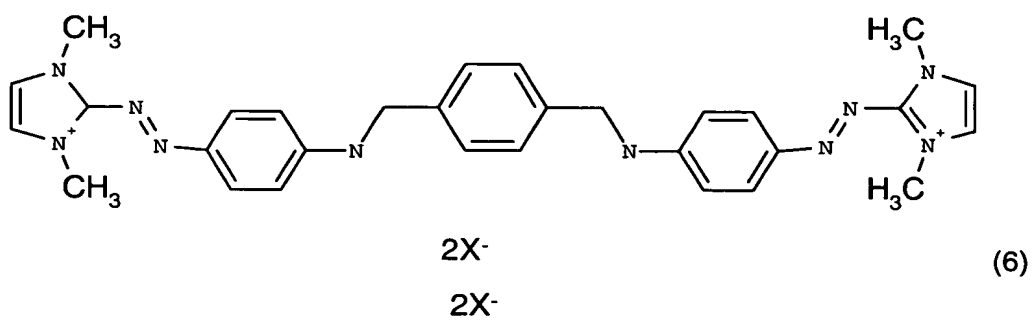
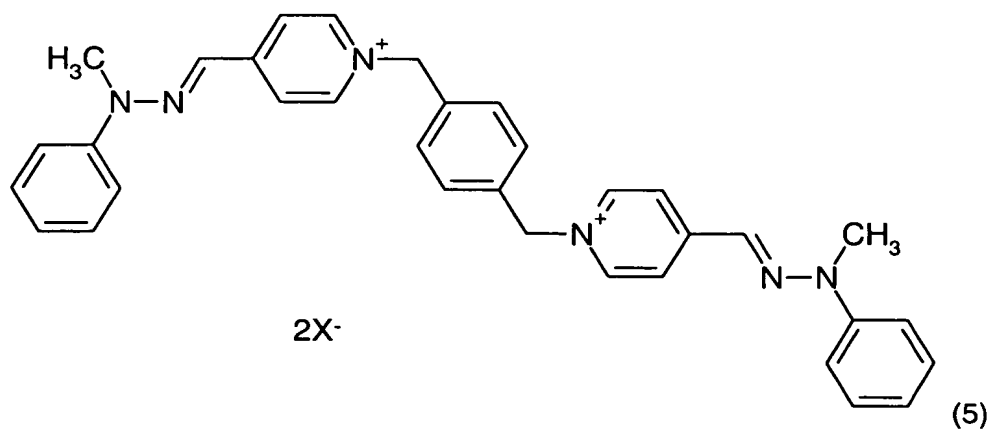
R<sub>3</sub> is hydrogen,

R<sub>4</sub> is hydrogen, unsubstituted or substituted C<sub>1</sub>-C<sub>6</sub>alkyl or unsubstituted or substituted benzyl,  
and

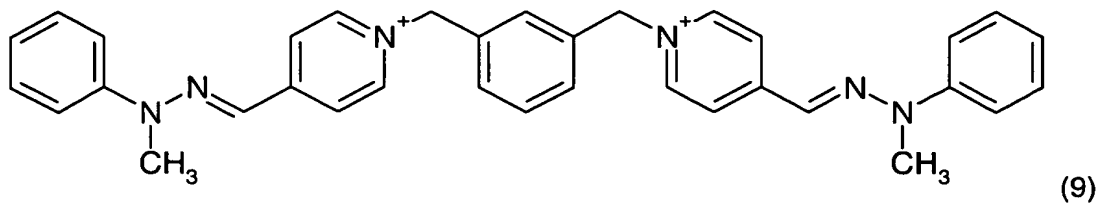
X<sup>-</sup> is an anion.

4. Cationic dye according to anyone of claims 1 to 3 of formula (4), (5), (6), (7), (8), (9), (10),  
(11) or (12)

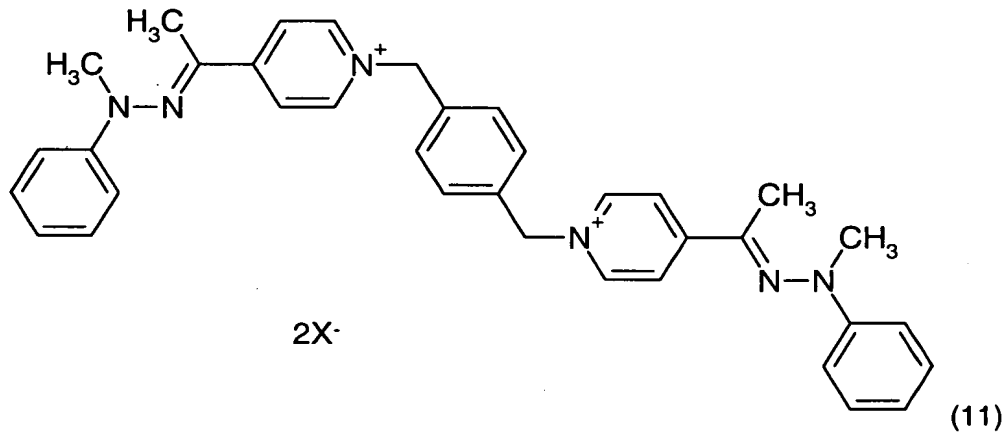
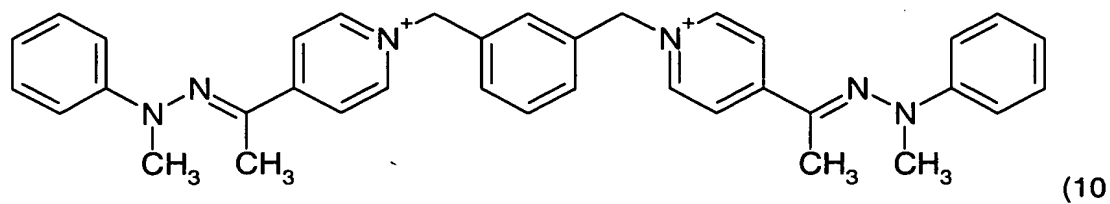




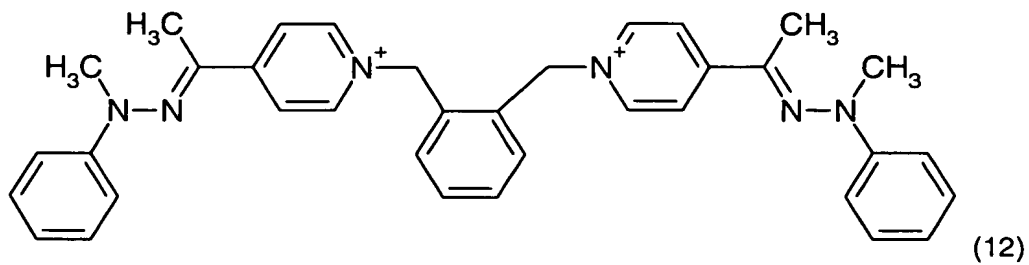
2X<sup>-</sup>



2X<sup>-</sup>



2X<sup>-</sup>

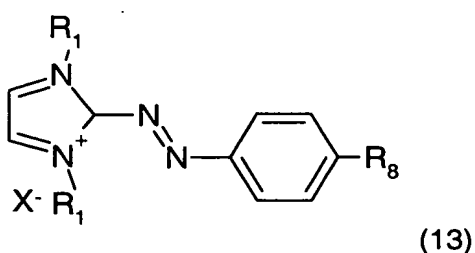


wherein

$X^-$  is an anion.

5. Cationic dye according to anyone of claims 1 and 4, wherein the anion is halide, sulfate, hydrogen sulfate, phosphate, boron tetrafluoride, carbonate, bicarbonate, oxalate,  $C_1$ - $C_8$ alkyl sulfate, lactate, formate, acetate, propionate or a complex anion.

6. A process for the preparation of cationic dyes according to claim 1, which comprises reacting a compound of formula (13),



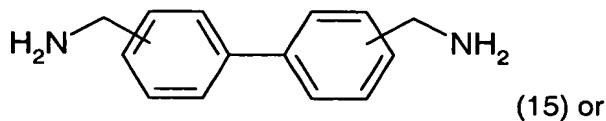
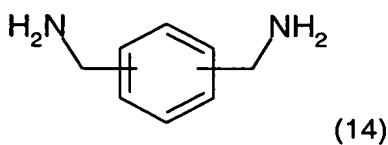
wherein

$R_1$  is an unsubstituted or substituted  $C_1$ - $C_{14}$ alkyl or an aryl radical,

$R_8$  is  $C_1$ - $C_6$ alkoxy or halide, preferred halides are chloride or fluoride, and

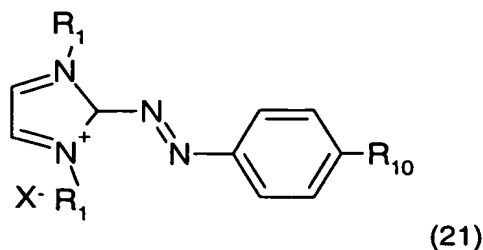
$X^-$  is an anion,

with a compound of formula (14) or (15)



or

reacting a compound of formula (21),



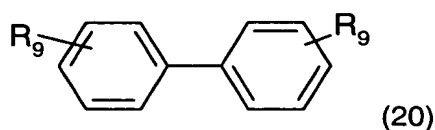
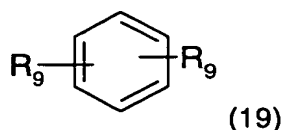
wherein

$R_1$  is an unsubstituted or substituted  $C_1$ - $C_{14}$ alkyl or an aryl radical,

$R_{10}$  is  $-NH_2$ , and

$X^-$  is an anion,

with a compound of formula (19) or (20)

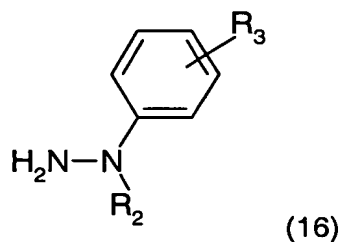


wherein

$R_9$  is  $C_1$ - $C_6$ alkoxy or halide.

7. A process for the preparation of a cationic dye according to claim 1, which comprises

a) reacting a phenylhydrazine of formula (16),

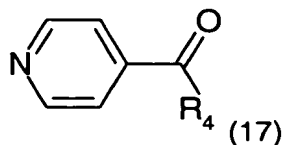


wherein

$R_2$  is an unsubstituted or substituted  $C_1$ - $C_{14}$ alkyl or an aryl radical, and

$R_3$  is hydrogen, unsubstituted or substituted  $C_1$ - $C_{14}$ alkyl, unsubstituted or substituted  $C_1$ - $C_{14}$ alkoxy, cyan or halogenid,

with a 4-pyridine acyl compound of formula (17)

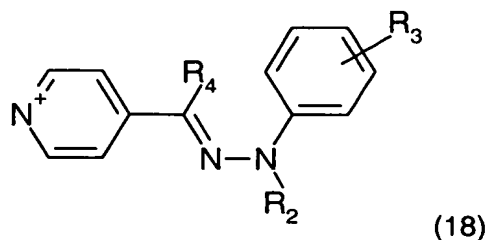


wherein

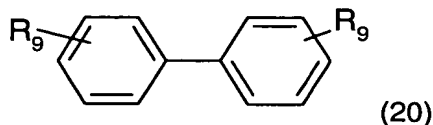
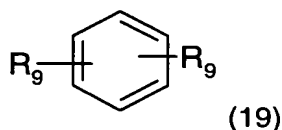
$R_4$  is hydrogen, unsubstituted or substituted  $C_1$ - $C_{14}$ alkyl or an aryl radical;

in the presence of an acid, and

to form a hydrazone of formula (18),



b) and then, reacting the hydrazone of formula (18) with a compound of formula (19) or (20)



wherein

R<sub>9</sub> is C<sub>1</sub>-C<sub>6</sub>alkoxy or halide, preferred halides are chloride, bromide or fluoride.

8. A composition comprising at least a single cationic dye of formula (1) and/or (1a) as defined above in claim 1, or prepared by a process according to anyone of claims 6 and 7.

9. A composition according to claim 8 comprising in addition at least a single further direct dye and/or an oxidative agent.

10. A composition according to anyone of claims 8 and 9 comprising in addition at least a single oxidative dye and/or; at least a single oxidative dye and an oxidative agent.

11. A composition according to anyone of claims 8, 9 or 10 in form of a shampoo, gel or emulsion.

12. A method of dyeing organic material, that comprises bringing into contact with the organic material at least a single a cationic dye of formula (1) and/or (1a) according to claims 1 to 5, or a composition according to claims 8 to 11, or a cationic dye as prepared according to claims 6 and 7, and, optionally, a further dye.

13. A method according to claim 12 for dyeing or tinting human hair.

14. A method for dyeing human hair or strands according to anyone claims 12 or 13, that comprises contacting the hair with at least a single a cationic dye of formula (1) and/or (1a) as defined in claim 1 and an oxidative agent and, optionally, a further direct dye.

15. A method for dyeing human hair according to anyone of claims 12 to 14, that comprises contacting the hair with at least a single a cationic dye of formula (1) and/or (1a) as defined in claim 1 and at least a single oxidative dye; or contacting the hair with a cationic dye of (1) and/or (1a) as defined in claim 1 and at least a single oxidative dye and an oxidative agent.

16. A method for dyeing human hair according to anyone of claims 12 to 15, that comprises contacting the hair

- a) with at least a single cationic dye of formula (1) and/or (1a) as defined in claim 1 and with at least a single developer compound, coupler compound and oxidizing agent, and
- b) then, contacting the hair with an acid and optionally with at least a single cationic dye of formula (1) and/or (1a) as defined in claim 1 and/or at least a single developer compound, coupler compound and/or at least a single oxidizing agent.

17. A method according to claim 12 for dyeing or paper.